DELAMINATION RESUITANCE OF OXIDE ENVIRONMENTAL BARRIER COATINGS FROM SiC/SiC SUBSTRATE

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Oxide ceramic Environmental Barrier Coatings (EBCs) have been developed to protect SiC/SiC surface from use harsh environment. The durability of EBCs is limited by delamination of EBC layer from a SiC/SiC component. Prediction of the delamination resistance is needed both for materials development and design of SiC/SiC components. The present talk shows a simple technique for measurement of delamination resistance in EBCs under shear loading. The developed technique overcomes micro damage accumulation properties of SiC/SiC substrate and delamination toughness under shear mode could be obtained using a simple fixture and loading device. Demonstration of the present procedure is carried out using a BSAS/mullite+BSAS/Si standard EBC layer on a three-dimensional woven fabric SiC/SiC composite substrate. The set of experimental result suggests that it is possible to apply delamination resistance/toughness of EBC coating layer on SiC/SiC substrate. However, local strain distribution of EBC layer, which related 2D or 3D fiber bundle structure, should be considered for determination of delamination resistance. Some unsolved problems related to determination of delamination resistance/delamination toughness are also discussed.